General

Guideline Title

Screening for primary hypertension in children and adolescents: U.S. Preventive Services Task Force recommendation statement.

Bibliographic Source(s)

U.S. Preventive Services Task Force (USPSTF). Screening for primary hypertension in children and adolescents: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2013 Nov 5;159(9):613-9. [12 references] PubMed

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: U.S. Preventive Services Task Force (USPSTF). Screening for high blood pressure: recommendations and rationale. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2003 Jul 14. 12 p.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Recommendations

Major Recommendations

The U.S. Preventive Services Task Force (USPSTF) grades its recommendations (A, B, C, D, or I) and identifies the levels of certainty regarding net benefit (High, Moderate, and Low). The definitions of these grades can be found at the end of the "Major Recommendations" field.

Summary of Recommendations and Evidence

The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for primary hypertension in asymptomatic children and adolescents to prevent subsequent cardiovascular disease in childhood or adulthood. (I statement)

Clinical Considerations

Patient Population Under Consideration

This recommendation applies to children and adolescents who do not have symptoms of hypertension.

Assessment of Risk

The strongest risk factor for primary hypertension in children and adolescents is elevated body mass index. Other risk factors include low birthweight, male sex, ethnicity, and family history of hypertension.

Suggestions for Practice Regarding the I Statement

When deciding whether to screen children and adolescents for hypertension, clinicians should consider the following factors.

Potential Preventable Burden

The increasing prevalence of hypertension in children and adolescents, possibly driven by childhood obesity, suggests that identification and treatment of hypertension is likely to become a significant health care issue. The goal of identifying and treating children and adolescents with primary hypertension can be viewed within a larger framework of adult cardiovascular risk reduction, which includes addressing other biometric risk factors, such as elevated body mass index and lipid profiles and hyperglycemia. The variables for cardiovascular risk reduction in adults are better understood because hypertension in adults is defined by relatively consistent quantitative thresholds, the epidemiologic evidence demonstrates the association between hypertension and subsequent cardiovascular risk, and treatment trials have shown that reduction in blood pressure reduces the risk for cardiovascular events in older adults.

Extending the adult framework for cardiovascular risk reduction to children and adolescents is limited by several methodological challenges that complicate determining the potential preventable burden. Blood pressure percentiles are used to define normative values for children and adolescents, and less is known about the clinical and epidemiologic significance of these thresholds in terms of their association with adult cardiovascular disease. In addition, the performance characteristics of current methods for diagnosing hypertension during childhood are limited and of concern because of false-positive rates (blood pressure measurements that later normalize). Evidence on the association between childhood blood pressure and adult hypertension is limited, as is evidence on the longitudinal association between childhood blood pressure and other markers of adult cardiovascular disease.

Most important, the limited data on treatment of hypertension in children and adolescents do not include longer-term follow-up to show reductions in surrogate, subclinical, or clinical measures of cardiovascular disease in either later adolescence or young adulthood. This limited evidence base makes it difficult to quantify the true significance and consequences of a hypertension diagnosis in children and adolescents and the potential benefit of early intervention.

One rationale that has been suggested for screening is to identify secondary hypertension—a relatively rare condition resulting from another underlying cause, such as renal parenchymal disease or renovascular disease. Younger children are more likely than older children and adolescents to have a secondary cause of hypertension; a recent study suggests that secondary causes of hypertension are significantly more common in children younger than 6 years than in older children. Secondary hypertension is unlikely to be the only clinical manifestation of the underlying disorder in these cases, and management is primarily targeted at treating the underlying condition, as well as controlling hypertension. As children age into adolescence, 85% to 95% of all hypertension diagnoses are considered primary.

Potential Harms

Although 1 good-quality study suggests that no adverse effects are associated with hypertension detection in childhood, the evidence on the diagnostic accuracy of clinic-based screening for hypertension suggests that false positive results may occur. Thus, unnecessary secondary evaluations or treatments may be common, particularly with frequent blood pressure screening. Pharmacologic interventions have been shown to be well-tolerated over relatively short periods. Treatment of hypertension in childhood and adolescence with pharmacologic agents is done or a much longer period, and adverse effects of such pharmacotherapy can occur.

Current Practice

Current screening practice for elevated blood pressure typically involves measurement of blood pressure in office-based health care settings as part of well-child or sports preparticipation examinations, often in conjunction with other vital signs and growth parameters. The National High Blood Pressure Education Program (NHBPEP) percentile charts are used to interpret systolic blood pressure (SBP) and diastolic blood pressure (DBP) measurements and categorize them as normal, prehypertension, or hypertension on the basis of the child's age, height, and sex for each year of the child's life from age 3 to 18 years.

A 2012 study analyzing data from the National Ambulatory Medical Care Survey and the National Hospital Ambulatory Medical Care Survey assessed blood pressure screening during pediatric ambulatory office visits. It found that screening was done during 67% of preventive care visits and 35% of ambulatory visits. Screening was more common in children who were overweight or obese; 84% of these preventive care visits included screening for hypertension. It was also more likely to be done in older children.

Screening Tests

The consensus-based guidelines of the NHBPEP and National Heart, Lung, and Blood Institute define hypertension in children on the basis of percentiles according to age, height, and sex. Hypertension is defined as SBP or DBP at or above the 95th percentile. Hypertension is classified as stage 1 (SBP or DBP from 95th to 99th percentile, plus 5 mm Hg) or stage 2 (SBP or DBP >99th percentile, plus 5 mm Hg). The NHBPEP provides guidance on optimal blood pressure measurement techniques, such as appropriate cuff size and type of sphygmomanometer. Blood pressure should be measured in a controlled environment after 5 minutes of rest, with the patient seated and the right arm supported at heart level.

Treatment

Stage 1 hypertension in children is treated with lifestyle and pharmacologic interventions. Medications are not recommended as first-line therapy. Lifestyle interventions for hypertension include weight reduction in children who are overweight or obese, increased physical activity, and restricted sodium intake, as well as education and counseling. The NHBPEP recommends medication for children with stage 2 hypertension or for hypertension that is unresponsive to lifestyle modification.

Many medications have been approved by the U.S. Food and Drug Administration for the treatment of hypertension in children, including diuretics, angiotensin-converting enzyme inhibitors, angiotensin-receptor blockers, β-blockers, and vasodilators.

Screening Intervals

Several organizations recommend routine screening of blood pressure at well-child visits starting at age 3 years, based on consensus.

Definitions:

What the U.S. Preventive Services Task Force (USPSTF) Grades Mean and Suggestions for Practice

Grade	Grade Definitions	Suggestions for Practice
A	The USPSTF recommends the service. There is high certainty that the net benefit is substantial.	Offer or provide this service.
B	The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.	Offer or provide this service.
C	The USPSTF recommends selectively offering or providing this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small.	Offer or provide this service for selected patients depending on individual circumstances.

Grade	Grade Definitions	Suggestions for Practice
D	The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.	Discourage the use of this service.
I Statement	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be measured.	Read "Clinical Considerations" section of USPSTF Recommendation Statement (see the "Major Recommendations" field). If the service is offered, patients should understand the uncertainty about the balance of benefits and harms.

USPSTF Levels of Certainty Regarding Net Benefit

Definition: The USPSTF defines *certainty* as "likelihood that the USPSTF assessment of the net benefit of a preventive service is correct." The net benefit is defined as benefit minus harm of the preventive service as implemented in a general, primary care population. The USPSTF assigns a certainty level based on the nature of the overall evidence available to assess the net benefit of a preventive service.

Level of Certainty	Description
High	The available evidence usually includes consistent results from well-designed, well-conducted studies in representative primary care populations. These studies assess the effects of the preventive service on health outcomes. This conclusion is therefore unlikely to be strongly affected by the results of future studies.
Moderate	The available evidence is sufficient to determine the effects of the preventive service on health outcomes, but confidence in the estimate is constrained by factors such as: The number, size, or quality of individual studies Inconsistency of findings across individual studies Limited generalizability of findings to routine primary care practice; and Lack of coherence in the chain of evidence As more information becomes available, the magnitude or direction of the observed effect could change, and this change may be large enough to alter the conclusion.
Low	The available evidence is insufficient to assess effects on health outcomes. Evidence is insufficient because of: The limited number or size of studies Important flaws in study design or methods Inconsistency of findings across individual studies Gaps in the chain of evidence Findings not generalizable to routine primary care practice; and A lack of information on important health outcomes More information may allow an estimation of effects on health outcomes.

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Hypertension

Guideline Category

Prevention

Screening

Clinical Specialty

Family Practice

Internal Medicine

Pediatrics

Preventive Medicine

Intended Users

Advanced Practice Nurses

Allied Health Personnel

Nurses

Physician Assistants

Physicians

Public Health Departments

Guideline Objective(s)

- To summarize the current U.S. Preventive Services Task Force (USPSTF) recommendations on screening for high blood pressure in children and adolescents
- To update the 2003 USPSTF recommendations on screening for primary hypertension in children and adolescents

Target Population

Children and adolescents who do not have symptoms of hypertension

Interventions and Practices Considered

Screening for primary elevated blood pressure with sphygmomanometry

Major Outcomes Considered

- Key Question 1: Is screening for hypertension in children/adolescents effective in delaying the onset of or reducing adverse health outcomes related to hypertension?
- Key Question 2: What is the diagnostic accuracy of screening tests for elevated blood pressure in children/adolescents?
- Key Question 3: What is the association between hypertension in children/adolescents and hypertension and other intermediate outcomes in adults?
- Key Question 4: What are the adverse effects of screening for hypertension in children/adolescents, including labeling and anxiety?
- Key Question 5: What is the effectiveness of drug, nondrug, and combination interventions for

treating primary hypertension in children/adolescents?

- Key Question 6: What is the effectiveness of drug, nondrug, and combination interventions initiated for the treatment of primary hypertension in children/adolescents for reducing blood pressure and other intermediate outcomes in adults?
- Key Question 7: What is the effectiveness of drug, nondrug, and combination interventions initiated for the treatment of primary hypertension in children/adolescents for reducing adverse health outcomes in adults related to primary hypertension?
- Key Question 8: What are the adverse effects of drug, nondrug, and combination interventions for treating primary hypertension in children/adolescents?

Methodology

Methods Used to Collect/Select the Evidence

Hand-searches of Published Literature (Primary Sources)

Hand-searches of Published Literature (Secondary Sources)

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Note from the National Guideline Clearinghouse (NGC): A systematic evidence review was prepared by the Oregon Evidence-based Practice Center (EPC), Oregon Health & Science University for the U.S. Preventive Services Task Force (USPSTF) (see the "Availability of Companion Documents" field).

Search Strategies

EPC staff searched the Cochrane Central Register of Controlled Trials and the Cochrane Database of Systematic Reviews (through July 2012) and MEDLINE (1946 to July 9, 2012) for relevant studies and systematic reviews, and manually reviewed reference lists for relevant citations (see Appendix 1 in the systematic evidence review [see the "Availability of Companion Documents" field]).

Study Selection and Processes

Papers were selected for full review if they met predefined inclusion criteria (see Appendix 2 in the systematic evidence review [see the "Availability of Companion Documents" field]). Controlled studies of screening for hypertension in asymptomatic children and adolescents were included. For studies of diagnostic accuracy, eligible studies included a reference standard comparison and provided adequate data to reproduce contingency tables. Evidence from randomized placebo-controlled trials was used to assess the efficacy of treatments on multiple outcomes, including blood pressure, other intermediate health outcomes, and final health outcomes, in childhood, adolescence, and adulthood. Studies with <30 participants and studies of interventions for the treatment of obesity and lipid disorders in children were excluded, because these populations are considered in other USPSTF recommendations. To assess harms of treatment, studies without a comparison or a placebo group were included. Studies of secondary hypertension were excluded, although some studies included proportions of participants with secondary hypertension.

All citations identified through searches and other sources were independently reviewed by 2 authors for inclusion and exclusion. Discrepancies at the full-text level were resolved through consensus. One author extracted data on the patient population, study design, testing methods, analysis, follow-up, and results, and a second author checked data extraction for accuracy.

Number of Source Documents

- Key Question 1: 0 studies
- Key Question 2: 2 trials
- Key Question 3: 10 cohort studies
- Key Question 4: 1 study
- Key Question 5: 14 randomized controlled trials (in 15 publications)
- Key Question 6: 0 studies
- Key Question 7: 0 studies
- Key Question 8: 13 trials and 2 U.S. Food and Drug Administration analyses

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Not Given)

Rating Scheme for the Strength of the Evidence

Not stated

Methods Used to Analyze the Evidence

Review of Published Meta-Analyses

Systematic Review with Evidence Tables

Description of the Methods Used to Analyze the Evidence

Note from the National Guideline Clearinghouse (NGC): A systematic evidence review was prepared by the Oregon Evidence-based Practice Center (EPC), Oregon Health & Science University for the U.S. Preventive Services Task Force (USPSTF) (see the "Availability of Companion Documents" field).

Quality Assessment and Synthesis

By using predefined criteria developed by the USPSTF, 2 authors rated the quality of studies (good, fair, poor) and resolved discrepancies by consensus. Authors assessed the overall strength of the body of evidence for each key question as good, fair, or poor by using methods developed by the USPSTF on the basis of the number, quality, and sample size of studies, as well as the consistency of results among studies and directness of the evidence. The limited number of studies and the heterogeneity of study designs, interventions, and diagnostic tests precluded meta-analyses; results are therefore summarized qualitatively as means or as ranges, as appropriate.

Methods Used to Formulate the Recommendations

Balance Sheets

Expert Consensus

Description of Methods Used to Formulate the Recommendations

The U.S. Preventive Services Task Force (USPSTF) systematically reviews the evidence concerning both the benefits and harms of widespread implementation of a preventive service. It then assesses the certainty of the evidence and the magnitude of the benefits and harms. On the basis of this assessment,

the USPSTF assigns a letter grade to each preventive service signifying its recommendation about provision of the service (see table below). An important, but often challenging, step is determining the balance between benefits and harms to estimate "net benefit" (that is, benefits minus harms).

Table 1. U.S. Preventive Services Task Force Recommendation Grid*

Certainty of Net Benefit	Magnitude of Net Benefit			
	Substantial	Moderate	Small	Zero/Negative
High	A	B	C	D
Moderate	B	B	C	D
Low	Insufficient			

**A, B, C, D,* and *I (Insufficient)* represent the letter grades of recommendation or statement of insufficient evidence assigned by the U.S. Preventive Services Task Force after assessing certainty and magnitude of net benefit of the service (see the "Rating Scheme for the Strength of the Recommendations" field).

The overarching question that the Task Force seeks to answer for every preventive service is whether evidence suggests that provision of the service would improve health outcomes if implemented in a general primary care population. For screening topics, this standard could be met by a large randomized, controlled trial (RCT) in a representative asymptomatic population with follow-up of all members of both the group "invited for screening" and the group "not invited for screening."

Direct RCT evidence about screening is often unavailable, so the Task Force considers indirect evidence. To guide its selection of indirect evidence, the Task Force constructs a "chain of evidence" within an analytic framework. For each key question, the body of pertinent literature is critically appraised, focusing on the following 6 questions:

> Do the studies have the appropriate research design to answer the key question(s)?
> To what extent are the existing studies of high quality? (i.e., what is the internal validity?)
> To what extent are the results of the studies generalizable to the general U.S. primary care population and situation? (i.e., what is the external validity?)
> How many studies have been conducted that address the key question(s)? How large are the studies? (i.e., what is the precision of the evidence?)
> How consistent are the results of the studies?
> Are there additional factors that assist the USPSTF in drawing conclusions (e.g., presence or absence of dose–response effects, fit within a biologic model)?

The next step in the Task Force process is to use the evidence from the key questions to assess whether there would be net benefit if the service were implemented. In 2001, the USPSTF published an article that documented its systematic processes of evidence evaluation and recommendation development. At that time, the Task Force's overall assessment of evidence was described as good, fair, or poor. The Task Force realized that this rating seemed to apply only to how well studies were conducted and did not fully capture all of the issues that go into an overall assessment of the evidence about net benefit. To avoid confusion, the Task Force has changed its terminology. Whereas individual study quality will continue to be characterized as good, fair, or poor, the term certainty will now be used to describe the Task Force's assessment of the overall body of evidence about net benefit of a preventive service and the likelihood that the assessment is correct. Certainty will be determined by considering all 6 questions listed above; the judgment about certainty will be described as high, moderate, or low.

In making its assessment of certainty about net benefit, the evaluation of the evidence from each key question plays a primary role. It is important to note that the Task Force makes recommendations for real-world medical practice in the United States and must determine to what extent the evidence for each key question—even evidence from screening RCTs or treatment RCTs—can be applied to the general primary care population. Frequently, studies are conducted in highly selected populations under special

conditions. The Task Force must consider differences between the general primary care population and the populations studied in RCTs and make judgments about the likelihood of observing the same effect in actual practice.

It is also important to note that one of the key questions in the analytic framework refers to the potential harms of the preventive service. The Task Force considers the evidence about the benefits and harms of preventive services separately and equally. Data about harms are often obtained from observational studies because harms observed in RCTs may not be representative of those found in usual practice and because some harms are not completely measured and reported in RCTs.

Putting the body of evidence for all key questions together as a chain, the Task Force assesses the certainty of net benefit of a preventive service by asking the 6 major questions listed above. The Task Force would rate a body of convincing evidence about the benefits of a service that, for example, derives from several RCTs of screening in which the estimate of benefits can be generalized to the general primary care population as "high" certainty (see the "Rating Scheme for the Strength of Recommendations" field). The Task Force would rate a body of evidence that was not clearly applicable to general practice or has other defects in quality, research design, or consistency of studies as "moderate" certainty. Certainty is "low" when, for example, there are gaps in the evidence linking parts of the analytic framework, when evidence to determine the harms of treatment is unavailable, or when evidence about the benefits of treatment is insufficient. Table 4 in the methodology document listed below (see the "Availability of Companion Documents" field) summarizes the current terminology used by the Task Force to describe the critical assessment of evidence at all 3 levels: individual studies, key questions, and overall certainty of net benefit of the preventive service.

Sawaya GF et al. Update on the methods of the U.S. Preventive Services Task Force: estimating certainty and magnitude of net benefit. Ann Intern Med. 2007;147:871-875. [5 references].

I Statements

For I statements, the USPSTF has a new plan to commission its Evidence-based Practice Centers to collect information in 4 domains pertinent to clinical decisions about prevention and to report this information routinely. This plan is described in the paper: Petitti DB et al. Update on the methods of the U.S. Preventive Services Task Force: insufficient evidence. Ann Intern Med. 2009;150:199-205. http://www.annals.org .

The first domain is potential preventable burden of suffering from the condition. When evidence is insufficient, provision of an intervention designed to prevent a serious condition (such as dementia) might be viewed more favorably than provision of a service designed to prevent a condition that does not cause as much suffering (such as rash). The USPSTF recognized that "burden of suffering" is subjective and involves judgment. In clinical settings, it should be informed by patient values and concerns.

The second domain is potential harm of the intervention. When evidence is insufficient, an intervention with a large potential for harm (such as major surgery) might be viewed less favorably than an intervention with a small potential for harm (such as advice to watch less television). The USPSTF again acknowledges the subjective nature and the difficulty of assessing potential harms: for example, how bad is a "mild" stroke?

The third domain is cost—not just monetary cost, but opportunity cost, in particular the amount of time a provider spends to provide the service, the amount of time the patient spends to partake of it, and the benefits that might derive from alternative uses of the time or money for patients, clinicians, or systems. Consideration of clinician time is especially important for preventive services with only insufficient evidence because providing them could "crowd out" provision of preventive services with proven value, services for conditions that require immediate action, or services more desired by the patient. For example, a decision to routinely inspect the skin could take up the time available to discuss smoking cessation, or to address an acute problem or a minor injury that the patient considers important.

The fourth domain is current practice. This domain was chosen because it is important to clinicians for at least 2 reasons. Clinicians justifiably fear that not doing something that is done on a widespread basis in

the community may lead to litigation. More important, addressing patient expectations is a crucial part of the clinician–patient relationship in terms of building trust and developing a collaborative therapeutic relationship. The consequences of not providing a service that is neither widely available nor widely used are less serious than not providing a service accepted by the medical profession and thus expected by patients. Furthermore, ingrained care practices are difficult to change, and efforts should preferentially be directed to changing those practices for which the evidence to support change is compelling.

Although the reviewers did not explicitly recognize it when these domains were chosen, the domains all involve consideration of the potential consequences—for patients, clinicians, and systems—of providing or not providing a service. Others writing about medical decision making in the face of uncertainty have suggested that the consequences of action or inaction should play a prominent role in decisions.

Rating Scheme for the Strength of the Recommendations

What the U.S. Preventive Services Task Force (USPSTF) Grades Mean and Suggestions for Practice

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B	The USPSTF recommends the service. There is high certainty that the net benefit is moderate or there is moderate certainty that the net benefit is moderate to substantial.	Offer or provide this service.
C	The USPSTF recommends selectively offering or providing this service to individual patients based on professional judgment and patient preferences. There is at least moderate certainty that the net benefit is small.	Offer or provide this service for selected patients depending on individual circumstances.
D	The USPSTF recommends against the service. There is moderate or high certainty that the service has no net benefit or that the harms outweigh the benefits.	Discourage the use of this service.
I Statement	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of the service. Evidence is lacking, of poor quality, or conflicting, and the balance of benefits and harms cannot be measured.	Read "Clinical Considerations" section of USPSTF Recommendation Statement (see the "Major Recommendations" field). If the service is offered, patients should understand the uncertainty about the balance of benefits and harms.

USPSTF Levels of Certainty Regarding Net Benefit

Definition: The USPSTF defines *certainty* as "likelihood that the USPSTF assessment of the net benefit of a preventive service is correct." The net benefit is defined as benefit minus harm of the preventive service as implemented in a general, primary care population. The USPSTF assigns a certainty level based on the nature of the overall evidence available to assess the net benefit of a preventive service.

Level of Certainty	Description
High	The available evidence usually includes consistent results from well-designed, well-conducted studies in representative primary care populations. These studies assess the effects of the preventive service on health outcomes. This conclusion is therefore unlikely to be strongly affected by the results of future studies.
Moderate	The available evidence is sufficient to determine the effects of the preventive service on health outcomes, but confidence in the estimate is constrained by factors such as:

Level of Certainty	Description
	The number, size, or quality of individual studies Inconsistency of findings across individual studies Limited generalizability of findings to routine primary care practice; and Lack of coherence in the chain of evidence As more information becomes available, the magnitude or direction of the observed effect could change, and this change may be large enough to alter the conclusion.
Low	The available evidence is insufficient to assess effects on health outcomes. Evidence is insufficient because of: The limited number or size of studies Important flaws in study design or methods Inconsistency of findings across individual studies Gaps in the chain of evidence Findings not generalizable to routine primary care practice; and A lack of information on important health outcomes More information may allow an estimation of effects on health outcomes.

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Comparison with Guidelines from Other Groups

External Peer Review

Internal Peer Review

Description of Method of Guideline Validation

Peer Review. Before the U.S. Preventive Services Task Force (USPSTF) makes its final determinations about recommendations on a given preventive service, the Evidence-based Practice Center and the Agency for Healthcare Research and Quality send a draft evidence review to 4 to 6 external experts and to Federal agencies and professional and disease-based health organizations with interests in the topic. The experts are asked to examine the review critically for accuracy and completeness and to respond to a series of specific questions about the document. After assembling these external review comments and documenting the proposed response to key comments, the topic team presents this information to the USPSTF in memo form. In this way, the USPSTF can consider these external comments before it votes on its recommendations about the service. Draft recommendation statements are then circulated for comment among reviewers representing professional societies, voluntary organizations, and Federal agencies, as well as posted on the Task Force Web site for public comment. These comments are discussed before the final recommendations are confirmed.

Response to Public Comment. A draft version of this recommendation statement was posted for public comment on the USPSTF Web site from 26 February to 25 March 2013. Several comments noted the importance of detecting secondary hypertension through screening. In response to these comments, the USPSTF added additional information about secondary hypertension to the Clinical Considerations section of the original guideline document. Additional text was also added to clarify the scope of the review and address evidence gaps in the Benefits of Detection and Early Intervention, Suggestions for Practice Regarding the I Statement, and Research Needs and Gaps sections of the original guideline document.

Comparison with Guidelines from Other Groups. Recommendations for screening from the following groups were discussed: the American Academy of Pediatrics (AAP); the National Heart, Lung, and Blood Institute's Expert Panel on Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents; Bright Futures; the American Heart Association (AHA); and the American Academy of

Family Physicians (AAFP).

Evidence Supporting the Recommendations

Type of Evidence Supporting the Recommendations

The type of evidence supporting the recommendations is not specifically stated.

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Benefits of Detection and Early Intervention

The U.S. Preventive Services Task Force (USPSTF) found inadequate evidence to determine whether treatment of elevated blood pressure in children or adolescents results in sustained decreases in blood pressure in childhood because studies in this area have been of short duration; trials of the efficacy of antihypertension drugs were typically 4 weeks in duration, whereas studies of lifestyle interventions ranged from 2 months to 3 years with a median duration of 7 months.
The USPSTF also found inadequate evidence to determine the health outcomes associated with interventions to treat primary hypertension in childhood or adolescence.

Potential Harms

Harms of Detection and Early Intervention

The U.S. Preventive Services Task Force (USPSTF) found inadequate evidence to assess the potential harms of screening for primary hypertension in children and adolescents. Only 1 good-quality study was identified, and it did not find any adverse effects, as assessed by school absenteeism, of detecting primary hypertension in childhood.
The USPSTF found inadequate evidence to assess the potential harms of pharmacologic or nonpharmacologic treatment of elevated blood pressure in childhood or adolescence. Short-term pharmacologic treatments generally seemed to be well-tolerated, with no serious adverse events during short-term treatment periods. However, adverse event rates were often incompletely reported, and the evidence is limited by a lack of studies with follow-up longer than several weeks. Information on adverse effects of lifestyle interventions or lifestyle interventions combined with pharmacotherapy is also limited.

Qualifying Statements

Qualifying Statements

- The U.S. Preventive Services Task Force (USPSTF) makes recommendations about the effectiveness of specific clinical preventive services for patients without related signs or symptoms.
- It bases its recommendations on the evidence of both the benefits and harms of the service and an assessment of the balance. The USPSTF does not consider the costs of providing a service in this assessment.
- The USPSTF recognizes that clinical decisions involve more considerations than evidence alone.

Clinicians should understand the evidence but individualize decision making to the specific patient or situation. Similarly, the USPSTF notes that policy and coverage decisions involve considerations in addition to the evidence of clinical benefits and harms.
- Recommendations made by the USPSTF are independent of the U.S. government. They should not be construed as an official position of the Agency for Healthcare Research and Quality or the U.S. Department of Health and Human Services.

Implementation of the Guideline

Description of Implementation Strategy

The experiences of the first and second U.S. Preventive Services Task Force (USPSTF), as well as that of other evidence-based guideline efforts, have highlighted the importance of identifying effective ways to implement clinical recommendations. Practice guidelines are relatively weak tools for changing clinical practice when used in isolation. To effect change, guidelines must be coupled with strategies to improve their acceptance and feasibility. Such strategies include enlisting the support of local opinion leaders, using reminder systems for clinicians and patients, adopting standing orders, and audit and feedback of information to clinicians about their compliance with recommended practice.

In the case of preventive services guidelines, implementation needs to go beyond traditional dissemination and promotion efforts to recognize the added patient and clinician barriers that affect preventive care. These include clinicians' ambivalence about whether preventive medicine is part of their job, the psychological and practical challenges that patients face in changing behaviors, lack of access to health care or of insurance coverage for preventive services for some patients, competing pressures within the context of shorter office visits, and the lack of organized systems in most practices to ensure the delivery of recommended preventive care.

Dissemination strategies have changed dramatically in this age of electronic information. While recognizing the continuing value of journals and other print formats for dissemination, the Agency for Healthcare Research and Quality will make all USPSTF products available through its Web site . The combination of electronic access and extensive material in the public domain should make it easier for a broad audience of users to access USPSTF materials and adapt them for their local needs. Online access to USPSTF products also opens up new possibilities for the appearance of the annual, pocket-size *Guide to Clinical Preventive Services*.

To be successful, approaches for implementing prevention have to be tailored to the local level and deal with the specific barriers at a given site, typically requiring the redesign of systems of care. Such a systems approach to prevention has had notable success in established staff-model health maintenance organizations, by addressing organization of care, emphasizing a philosophy of prevention, and altering the training and incentives for clinicians. Staff-model plans also benefit from integrated information systems that can track the use of needed services and generate automatic reminders aimed at patients and clinicians, some of the most consistently successful interventions. Information systems remain a major challenge for individual clinicians' offices, however, as well as for looser affiliations of practices in network-model managed care and independent practice associations, where data on patient visits, referrals, and test results are not always centralized.

Implementation Tools

Mobile Device Resources

Patient Resources

Pocket Guide/Reference Cards

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Staying Healthy

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

U.S. Preventive Services Task Force (USPSTF). Screening for primary hypertension in children and adolescents: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2013 Nov 5;159(9):613-9. [12 references] PubMed

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

1996 (revised 2013 Nov 5)

Guideline Developer(s)

U.S. Preventive Services Task Force - Independent Expert Panel

Guideline Developer Comment

The U.S. Preventive Services Task Force (USPSTF) is a federally-appointed panel of independent experts. Conclusions of the USPSTF do not necessarily reflect policy of the U.S. Department of Health and Human Services (DHHS) or its agencies.

Source(s) of Funding

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Guideline Committee

U.S. Preventive Services Task Force (USPSTF)

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**Members of the Task Force at the time this recommendation was finalized. For a list of current Task Force members, go to http://www.uspreventiveservicestaskforce.org/Page/Name/our-members*

Financial Disclosures/Conflicts of Interest

The U.S. Preventive Services Task Force (USPSTF) has an explicit policy concerning conflict of interest. All members disclose at each meeting if they have a significant financial, professional/business, or intellectual conflict for each topic being discussed. USPSTF members with conflicts may be recused from discussing or voting on recommendations about the topic in question.

Disclosure forms from USPSTF members can be viewed at www.acponline.org/authors/icmje/ConflictOfInterestForms.do?msNum=M13-1914.

Guideline Status

This is the current release of the guideline.

This guideline updates a previous version: U.S. Preventive Services Task Force (USPSTF). Screening for high blood pressure: recommendations and rationale. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2003 Jul 14. 12 p.

This guideline meets NGC's 2013 (revised) inclusion criteria.

Guideline Availability

Electronic copies: Available from the Annals of Internal Medicine Web site.

Availability of Companion Documents

The following are available:

Evidence Reviews:

Thompson M, Dana T, Bougatsos C, Blazina I, Norris S. Screening for hypertension in children and adolescents to prevent cardiovascular disease: systematic review for the U.S. Preventive Services Task Force. Evidence Synthesis No. 99. AHRQ Publication No. 13-05181-EF-1. Rockville (MD): Agency for Healthcare Research and Quality; 2013 Feb. 148 p.
Thompson M, Dana T, Bougatsos C, Blazina I, Norris S. Screening for hypertension in children and adolescents to prevent cardiovascular disease. Evidence review. Pediatr. 2013 Mar;131(3):490-525.

Electronic copies: Available from the U.S. Preventive Services Task Force (USPSTF) Web site .

Background Articles:

Barton MB et al. How to read the new recommendation statement: methods update from the U.S. Preventive Services Task Force. Ann Intern Med 2007;147:123-127.
Guirguis-Blake J et al. Current processes of the U.S. Preventive Services Task Force: refining evidence-based recommendation development. Ann Intern Med 2007;147:117-122.
Sawaya GF et al. Update on the methods of the U.S. Preventive Services Task Force: estimating certainty and magnitude of net benefit. Ann Intern Med 2007;147:871-875.
Petitti DB et al. Update on the methods of the U.S. Preventive Services Task Force: insufficient evidence. Ann Intern Med. 2009;150:199-205.

Electronic copies: Available from USPSTF Web site .

The following are also available:

Screening for primary hypertension in children and adolescents. Clinical summary of U.S. Preventive Services Task Force recommendation. 2013 Nov. 1 p. Electronic copies: Available from the USPSTF Web site .
The guide to clinical preventive services, 2012. Recommendations of the U.S. Preventive Services Task Force. Rockville (MD): Agency for Healthcare Research and Quality (AHRQ); 2012. 128 p. Electronic copies available from the AHRQ Web site . See the related QualityTool summary on the Health Care Innovations Exchange Web site .

The Electronic Preventive Services Selector (ePSS) is an application designed to provide primary care clinicians and health care teams timely decision support regarding appropriate screening, counseling, and preventive services for their patients. It is based on the current, evidence-based recommendations of the USPSTF and can be searched by specific patient characteristics, such as age, sex, and selected behavioral risk factors.

Patient Resources

The following are available:

Understanding task force recommendations: screening for primary hypertension in children and adolescents. Consumer fact sheet. 2013 Oct. 3 p. Electronic copies: Available from the U.S. Preventive Services Task Force (USPSTF) Web site .
Screening for primary hypertension in children and adolescents: U.S. Preventive Services Task Force recommendation statement. Summary for patients. Ann Intern Med. 2013 Nov 5;159(9):I-10. Electronic copies: Available from the Annals of Internal Medicine Web site .

Myhealthfinder is a new tool that provides personalized recommendations for clinical preventive services specific to the user's age, gender, and pregnancy status. It features evidence-based recommendations from the USPSTF and is available at www.healthfinder.gov .

to provide specific medical advice for particular patients. Rather we urge patients and their representatives to review this material and then to consult with a licensed health professional for evaluation of treatment options suitable for them as well as for diagnosis and answers to their personal medical questions. This patient information has been derived and prepared from a guideline for health care professionals included on NGC by the authors or publishers of that original guideline. The patient information is not reviewed by NGC to establish whether or not it accurately reflects the original guideline's content.

NGC Status

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